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ABSTRACT

The benefits of offering high school students career and technical education (CTE) in addition to training in basic academic skills and the cost-effectiveness of CTE were examined by reviewing available data on demand, supply, and results for CTE. The analysis confirmed that the market and demand for workers with only a high school education still remains sizable. According to employers who mostly hire workers with only a high school education, job-specific skills are the most difficult types of skills to find in high school graduates. Only about 18% of high school graduates complete a CTE program. A 2002 study of the net impacts of secondary CTE that was conducted by the W.E. Upjohn Institute for Employment Research documented that secondary-level CTE is associated with strong positive impacts on post high school employment and earnings. Specifically, CTE's impacts on selected employment indicators in the third year after individuals left secondary school were as follows: employment rate, +5.7%; hourly wage, +$.0.50; hours worked, +27.1; and annualized earnings, +$1,804.00. According to the Upjohn study, secondary-level CTE costs approximately $870 per student and yields an average net increase in earnings and employer-provided benefits of $3,469 during the first 2.5 years after high school and an estimated net increase of $71,236 during CTE participants' working lives. (MN)

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# *Demand, Supply, and Results for Secondary Career and Technical Education*

**January 2003**

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*The Workforce Training and Education Coordinating Board is Washington State's valued and trusted source of leadership for the workforce development system.*

### Mission Statement

The Workforce Training and Education Coordinating Board's mission is to bring business, labor, and the public sector together to shape strategies to best meet the state and local workforce and employer needs of Washington in order to create and sustain a high-skill, high-wage economy.

To fulfill this Mission, Board members, with the support of staff, work together to:

- Advise the Governor and Legislature on workforce development policy.
- Promote an integrated system of workforce development that responds to the lifelong learning needs of the current and future workforce.
- Advocate for the nonbaccalaureate training and education needs of workers and employers.
- Facilitate innovations in workforce development policy and practices.
- Ensure system quality and accountability by evaluating results and supporting high standards and continuous improvement.

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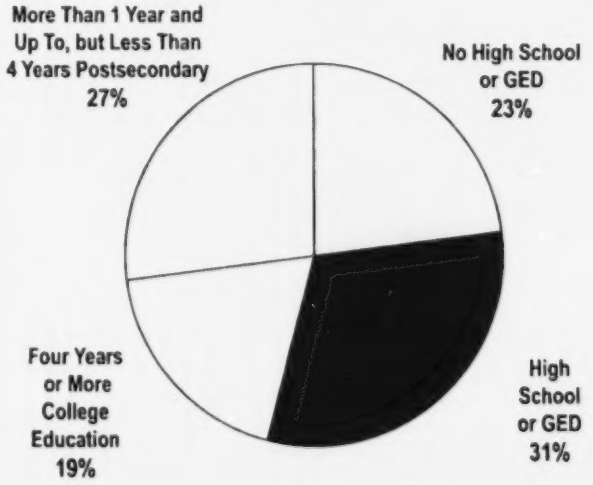
## Most High School Graduates Work after Graduation

- *About 37 percent of high school graduates work and do not attend postsecondary education during the year after graduation.*
- *At least 82 percent of high school graduates either work exclusively or work while attending postsecondary education during the year after graduation.*[1]

Given that about a third of high school graduates go to work after graduation without attending postsecondary education, it is important that schools provide them with the skills that employers need. While some go on to postsecondary education in latter years, many do not.

FIGURE 1

**Education Levels Required for Expected Job Openings Between 2000 and 2008 in Washington**


More Than 1 Year and Up To, but Less Than 4 Years Postsecondary 27%
No High School or GED 23%
Four Years or More College Education 19%
High School or GED 31%

Among Washington's population 25 years of age and older, 25 percent have a high school diploma or GED and no postsecondary education (United State Census 2000).

## There are Jobs for High School Graduates

*Thirty-one percent of job openings in Washington require only a high school diploma or GED.*

There remains a sizeable job market for workers with only a high school education. Among job openings expected in Washington between 2000 and 2008, based on data from the Employment Security Department, 31 percent are expected to require a high school diploma or GED but not a postsecondary credential. Not only do about a third of high school graduates go directly to work, about a third of job openings require just a high school level of education.

Obviously, jobs that require only a high school education do not pay as well as higher skilled positions. It is generally in the economic interest of an individual to obtain as many years of education as possible.

## Employers Want More High School Graduates with Job Specific Skills

*Among employers who mostly hire workers with only a high school education, the most difficult types of skills to find in high school graduates are job specific skills.*

Every two years the Workforce Board conducts a massive survey of Washington employers about their job training needs

and practices. Among other things, employers are asked about their difficulty in finding job applicants with different types of skills. The last survey occurred during the fall of 2001. We analyzed the survey responses of those employers who reported that 75 percent or more of their positions require a high school diploma or GED but no postsecondary credential. As far as we know, this is the only statewide survey of Washington employers who mostly hire at the high school level.

Among employers who mostly hire at the high school level, the type of skills that more report difficulty finding than any other skills are job specific skills. The second most common skill deficits are in general workplace skills such as problem solving, work habits, and communications. Far fewer employers report much difficulty finding workers with the basic academic skills of math, writing, or reading. This is not to suggest that academic skills are unimportant; it suggests that high schools should be preparing more young people with job specific and general workplace skills, in addition to academic skills.

## Under Supply of Secondary Career and Technical Education Completers

*Among high school graduates, only about 18 percent complete a program in career and technical education.*

There are almost 60,000 high school graduates per year in Washington. Of these, just 11,000, or 18 percent, complete a sequence of vocational programs. About half of these vocational completers go on to postsecondary education or training during the year after graduation. This leaves just 9 percent of high school graduates that complete a vocational sequence and go immediately to work after graduation. This 9 percent contrasts greatly with the 37 percent of all high school graduates that go to work after graduation without attending post-secondary education. Most high school graduates who go to work immediately after high school are not prepared in job specific skills. This helps explain why employers who hire mostly workers with only a high school level of education report difficulty finding workers with job specific skills.

FIGURE 2

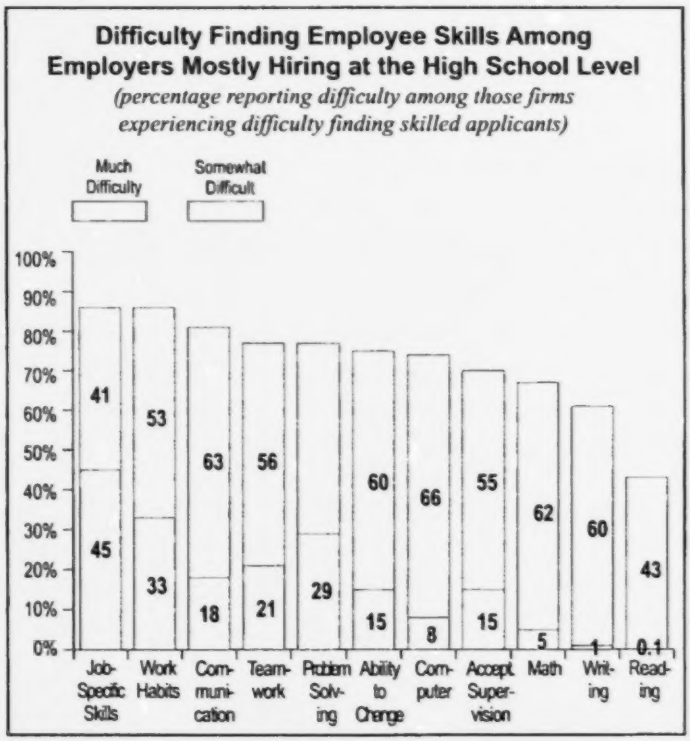


FIGURE 3

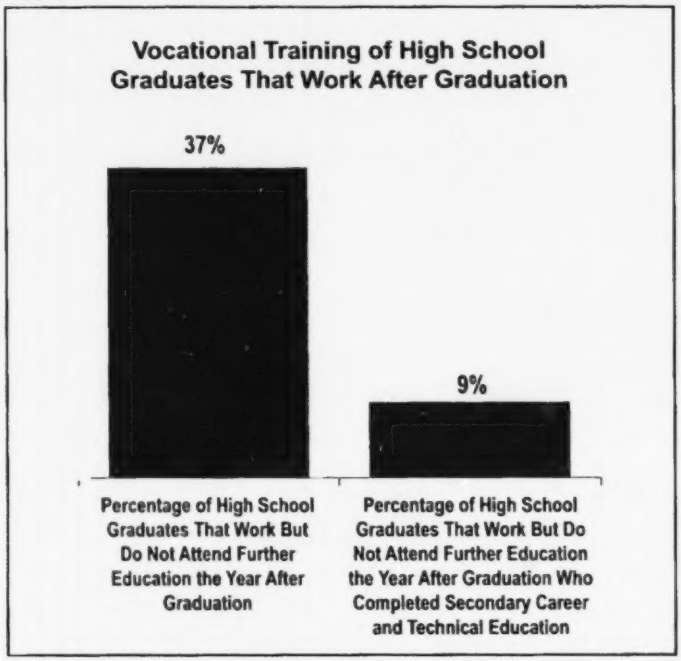

Vocational Training of High School Graduates That Work After Graduation
37%
9%
Percentage of High School Graduates That Work But Do Not Attend Further Education the Year After Graduation
Percentage of High School Graduates That Work But Do Not Attend Further Education the Year After Graduation Who Completed Secondary Career and Technical Education

FIGURE 4

**Net Impacts of Secondary Career and Technical Education**

| Outcome | Third Quarter After Leaving Secondary School | Third Year After Leaving Secondary School |
|---|---|---|
| Employment rate | +5.5 percent | +5.7 percent |
| Hourly wage | +$0.29[2] | +$0.50 |
| Hours worked | +11.4 hours | +27.1 hours |
| Annualized Earnings | +$448 | +$1,804 |

## Net Impacts of Secondary Career and Technical Education

In 2002, the W.E. Upjohn Institute for Employment Research conducted a net impact study of secondary career and technical education and other workforce development programs for the state Workforce Board. Upjohn compared the post-high school results for vocational completers with the results for other high school students who did not complete a vocational sequence. The study statistically controlled for race, ethnicity, gender, disability status, participation in need based special programs, grade point average, graduation from high school, region, public assistance receipt, employment history, previous industry, and earnings.

As shown in Figure 4, Upjohn found that secondary career and technical education is associated with strong positive impacts on post-high school employment and earnings. The data in the table represents the difference between results for vocational completers and results for other high school students.

## Secondary Career and Technical Education is Cost Effective

Upjohn also examined the financial benefits and costs of secondary career and technical education for both students and the public. They looked at the differences between vocational completers and other high school students in terms of post-high school earnings, employer provided benefits, and taxes.[3] Upjohn reported on

the differences between the two groups during the observed follow-up period of two-and-a-half years after high school and also estimated the lifetime impact until age 65. This estimate does not include the impacts from students completing associate, bachelor, graduate, or professional degrees. (Again, in general, the more years of education, the better off financially an individual is likely to be.)

Secondary career and technical education costs about $870 per student. This consists of the state general fund enhancement above the regular funding per student FTE and the federal Perkins Act funding on a per student basis. From this investment, career and technical education students experience an average net increase in earnings and employer provided benefits of $3,649 during the first two-and-a-half years after leaving high school and an estimated net increase of $71,236 during their working lives. Due to the increase in earnings, the public will benefit from an estimated $14,930 net increase in tax revenues from the state sales tax and federal income and payroll taxes. The expected net increase in tax revenues far exceeds the cost of the program.

## Conclusion

This paper began with two questions.

1. Should secondary schools offer high school students vocational training in addition to basic academic skills?

2. Is secondary career and technical education a cost effective program?

The answer to both questions is yes. Secondary schools should offer students vocational training because many students go to work after graduation and many employers hire workers with only a high school diploma and want those workers to have job-specific skills and general work-place skills. And, in answer to the second question, secondary career and technical education boosts student employment and earnings and generates tax revenues that far exceed the cost of the program.

FIGURE 5

**Benefits and Costs of Secondary Career and Technical Education Per Student and the Public**

| Benefit/ Cost | First 2.5 Years: Student | First 2.5 Years: Public | Lifetime Estimate: Student | Lifetime Estimate: Public |
|---|---|---|---|---|
| Earnings | +$3,041 | | +$59,363 | |
| Fringe Benefits | +$608 | | +$11,873 | |
| Taxes | -$765 | +$765 | -$14,930 | +$14,930 |
| Program Costs | | -$870 | | - $870 |

# Endnotes

[1] "Washington State Graduate Follow-up Study: Class of 2000 All Graduates First Year After Graduation Statewide Results," Office of the Superintendent of Public Instruction. The actual numbers may be slightly different because available data does not capture most individuals working or attending school outside of Washington.

[2] Not statistically significant at .10 level.

[3] Upjohn also analyzed differences in social welfare payments (Temporary Assistance for Needy Families, Food Stamps, and Medicaid). They found the observed differences to be statistically insignificant.

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# *Introduction*

This policy brief addresses two questions.

***First***: Should secondary schools offer high school students vocational training in addition to basic academic skills?

***Second***: Is secondary career and technical education a cost effective program?

The answer to both questions is yes.

Secondary career and technical education is currently offered in 235 school districts and 9 vocational skill centers and serves 189,000 Washington students.

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